Virginia WILDLIFE

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A February face, so full of frost,
of storm, and cloudiness!
—Shakespeare

Virginia WILDLIFE

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A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

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Cover

Commission photo by Kesteloo

The opossum (*Didelphus virginiana*), Virginia's most primitive mammal, is found in abundance in every county. It is hunted at night with hounds and because it is so numerous, the chase nearly always ends successfully.

Inside Cover *photo by Virginia State Chamber of Commerce*

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February Days and Nights

ALL NIGHT LONG the wind buffeted the house and all night long the snow fell. By the time I awoke for good in the gray-white dawn, the yard and woods around were blanketed with a foot of blowing, scudding, drifting snow. The gust-driven flakes outside my window scraped audibly on the glass and out in the pine and holly glen I could hear the moaning and the creaking of bending, frozen branches. This was February, the very personification of the cold that makes for winter.

Some people don't like snow and the cold that goes with it. For them I am sorry. Surely something would be sad and missing if we failed to experience the beauty and boldness of February days that give us a hoary breath and chattering teeth and nights that make us appreciate home fires all the more.

A good warm fire in the hearth and what matters if the snow runs deep or the wind howls its melancholy *voice* in the night. What we need is less complaining about the weather and more homespun philosophizing by the firelight and sterner winters outside.

Naturalist James Russell Lowell never had the controlled comfort of an oil burner, yet he welcomed *the ruler of the inverted year.* Take him as you find him, he said, and you'll find he is a thoroughly honest fellow with no nonsense in him, and tolerating none in you, which is a great comfort in the long run.

Cold winters—and none come better than February winters—invite a man to thinking, and thinking invites the sublimity of philosophy. How badly we need more time for philosophizing today! The art and the law of life are said to be philosophy, and it teaches us what to do in all cases and, like good marksmen, to hit the white at any distance.

How badly we need a strong, healthy philosophy of life today when nations are pitted against nations for world supremacy, when people are losing faith in leadership, when destruction of our basic values is still running rampant under our feet. How badly we need a conservation philosophy to live by today—how badly we need it for ourselves and our growing children.

Not so long ago I ran across a fine creed for human behavior and thought so well of it that I made a mental note of its contents. If we want to follow a beautiful philosophy of life—a conservation philosophy—here is something we can follow as a goal, a shining light, something we might guide by when snow runs deep and the winds blow extra strong. I commend it to you. It goes this way:

Believe in the wisdom of nature's design, for the Ruler of all that's good has wisely created the best for man.

Believe in the credo that all living things are interrelated, that soil, water, plants, animals, and minerals depend one upon the other and are vital to mankind. The honeybee that steals nectar from an apple bloom is as essential to our well-being as is the ripe fruit itself, and the green plant that lives on soil and water and minerals gives off in the presence of light the very oxygen we breathe.

Believe that only wise and persistent research and education will assure us of wise use of the earth's abundance. Condemn no single living plant or creature and work to assure survival of all. By learning to respect living things more, our journey through life will have more meaning. A better knowledge of the earth's living resources can only help us to know the most interesting of all living things—man himself.

Believe in the faith that each generation should be able to experience spiritual and physical refreshment in places where primitive nature is left undisturbed.

And lastly, dedicate a portion of your life and work to the pleasant task of opening the eyes and minds of the young and old that all may come to enjoy the beauty of the outdoor world and have a share in safeguarding its wonders for all ages.

Come, February winds, blow! The dull slumbering of the earth outside is good for the lethargic mind within.—J. J. S.

Social Self-Control

"THERE is ample evidence that a reasonably natural world is the only sanitary environment for a human being or any other animal. The nobility of man will be a vain and farcical idea if the earth is to be parceled out until every individual is competing with his equals for a meager share of pure air, clear water, green grass, and cool woodland. When we come to live by bread alone, we will have lost the something that makes us more than creatures.

"What this country is like even fifty years from now will be decided by how successful we are in attaining a measure of social self-control. Americans don't like control. That's how they got here in the first place. But recently there are so many of them they are having to divide things; and that, too, was long beneath their dignity. Now they are discovering that there is a point where independence becomes irresponsibility and liberty becomes license. Even freedom of the personal kind must be abridged somewhat in order that others can enjoy it in equal measure."

—Durward L. Allen, from *Our Wildlife Legacy*

Soil Conservation Service photo

In Virginia the black bear does a lot of sleeping in winter. However, he does not go into a complete stupor and will move about on warmer days.

WINTER and WILDLIFE

By JOE L. COGGIN

Special Services Officer, Western District

NO MATTER HOW severe the weather, man is privileged to sit leisurely by an open fireplace or sleep in a house at a desired temperature with the ease of turning a dial on the thermostat. This is a comforting feature indeed, but what about the various forms of wildlife which are openly confronted with the unpredictable out-of-doors? The reactions and adaptations of wildlife to the rigors of winter should kindle the interest of even the most casual observer.

Before we go on to a discussion of wildlife and winter, however, let's take a quick look at Virginia's weather.

Virginia's Weather

Climatologists, weathermen who collect and compile weather data, tell us that climate is dependent upon latitude, surroundings and topography. Virginia is located in the milder part of the north temperate zone with continental areas to the northwest and west, warm rolling lands to the south and the Atlantic Ocean to the east. Our interior topography may be classified into three distinct sections; from the indented coastal plains in the east to the rugged mountain ranges in the west.

Tidewater Virginia is the flat, near sea-level eastern section which rises slowly to the Blue Ridge Mountains, which is the second section. West of the Blue Ridge Mountains is the third section which includes the Shenandoah Valley in the middle and the Holoston Valley in the south.

Each section has its distinctive climate; however, from the *1941 Agricultural Yearbook* we can assemble various data concerning the average winter climate of our state. These data were collected over a period of forty or more years and are not intended to serve as weather predictions but as valuable indicators for the future. The average temperature in January ranges from 33° F. in the north to 39° F. in the south. Precipitation varies from 36 to 44 inches from north to south, and snowfall averages 17 inches throughout the state, varying from an average of 7 inches in the Virginia Capes to 25 inches in the Great Valley. Averages such as these tell much about the past climate of our state, but even with these climatic data it is hard to predict how severe or mild a winter may be.

Hibernation

One might well be envious of the black bear who may look the onslaught of cold weather squarely in the face and decide to hibernate, or sleep the winter out. After a steady and vigorous summer diet of berries, bugs, roots and other foods he has stored up enough fat to last him during his period of hibernation. The bear does not go into a complete stupor, but often leaves his den of brush or leaves to move about on the warmer days. Once every two years the female gives birth to one to four cubs, which are born in early spring just before the mother comes out of hibernation.

The woodchuck is another animal native to Virginia that spends the winter in hibernation. The first signs of cold weather are the cue for Mr. Woodchuck to crawl far back into his underground den, seal off his sleeping chambers with dirt, roll up in a ball with his head between his hind legs and become almost completely insensible to touch or sound. During this period of sleep his body temperature will cool to somewhere between 40° and 50° F., breathing slows down until it almost stops, and the pulse becomes faint. The black bear would seem like a neurotic insomniac to a woodchuck which is in a state of complete oblivion to the outside world. Woodchucks of the more northern states have been known to hibernate for as long as six months, which is about twice as long as the hibernation period of the black bear.

Bats, snakes, turtles, frogs, chipmunks, salamanders, spiders, crayfish, worms, snails and many insects also hibernate during the long winter months in various degrees of dormancy.

In the temperate zone, many fresh water fishes are known to hibernate. For example, a whole school of carp may be found literally "stuck in the mud" and remain partially buried and dormant until the winter thaw.

Fur Primeness and Color

Fur primeness and color of mammals is also affected by the seasonal changes brought on by winter. Colder temperatures require a heavy thick coat of hair and fur which is utilized by the animal for both protection and warmth. Due to the increasing difficulties brought upon the animal of obtaining food during the winter months, the fat, which has accumulated on the pelt, is used up by the animal and the pelt becomes thin. Whereas the hair and fur become heavy and thick and have attained their highest accent on beauty and excellence—thus the descriptive word "prime" is attributed to a hide in this condition.

Few of us have had the opportunity to see the varying hare (snowshoe or white rabbit) in Virginia because its range in this state is restricted to the higher altitudes of Highland County and in very limited numbers. Interesting indeed is the fact that, upon the arrival of the still winter months, his pelage has changed from reddish-brown to a very welcomed and useful white. Bonaparte weasels and ptarmigan of the more northern states and Alaska also sport a coat of one color in the summer and

TOP LEFT: The woodchuck is a true hibernator. During his winter sleep his body temperature drops, breathing slows down, and the pulse becomes faint.

LEFT: Two trappers pause to examine the "prime" fur of a muskrat. In Virginia the pelt of the muskrat is at its best during the months of January and February.

a coat of white during the winter months. That male ruddy duck you saw last winter with the large white patch under his eye probably looked more gray than ruddy, but during the previous spring he sported beautiful rufous plumage, as his name implies.

Apparently the biological change from a brown coat in the spring to a white coat in the fall is caused by varying amounts of light passing through the eyes of certain animals and thus stimulating the pituitary glands, the shorter daylight hours of the fall days causing the coat to turn white and the longer daylight hours of spring days causing the coat to turn brown again. This has been demonstrated by the experimental work of the biologist Per Host, C. P. Lyman, and T. H. Bissonette, who, by controlling the amount of light, caused a ptarmigan to molt and assume a white coat in May when it would normally have been brown.

Probably no one feature could work more to the advantage of an animal than the change to a white coat prior to the oncoming winter snows. For animals that stalk their prey, it serves to prevent them from being detected and is an excellent camouflage for animals that may be preyed upon.

Migration and Animal Movements

The fall migration of numerous species of birds is another vivid example of the adaptation of some animals to the prospects of a cold and frustrating winter. The influx of thousands of ducks and geese down the Atlantic Flyway from Canada to the eastern shores of Virginia, gives our state an illustrious example of this phenomenon. Virginia can also boast of many other species of birds that migrate to and from within her boundaries. Some, like the red-eyed vireo, may breed in all the eastern states and southern Canada and winter in South America, while others like the Canada goose of the Atlantic Flyway may breed in Canada or Greenland and winter on the eastern shores of the United States and Cuba. Various warblers, scarlet tanagers, robins, some sparrows and hawks are among a lengthy list of migratory birds.

Why birds migrate has been the topic of much research and many discussions without yielding a complete and decisive answer. However, the advantages of changing to a winter residence are much more easily understood. Apparently the migratory habit enables the bird to enjoy a cool summer in the northern latitudes and yet be able to avoid the severe winters. If all birds remained in the same region throughout the year, intolerable overcrowding would occur during the breeding season and food would not be as plentiful. By moving into a region which was uninhabitable earlier in the year, ample food and space can be found. Non-migratory species may also be benefited by the departure of the migrants. Another consideration is the depletion of food supply caused by a mantle of snow or ice and the disappearance or hibernation of insects in the cold of the northern regions during the winter months.

Did you ever notice the differences in animal movements brought on by the late fall and winter months? Take deer for instance: in the northern regions of the United States they are forced to band together into "yards" for the winter season. In Virginia they are gen-

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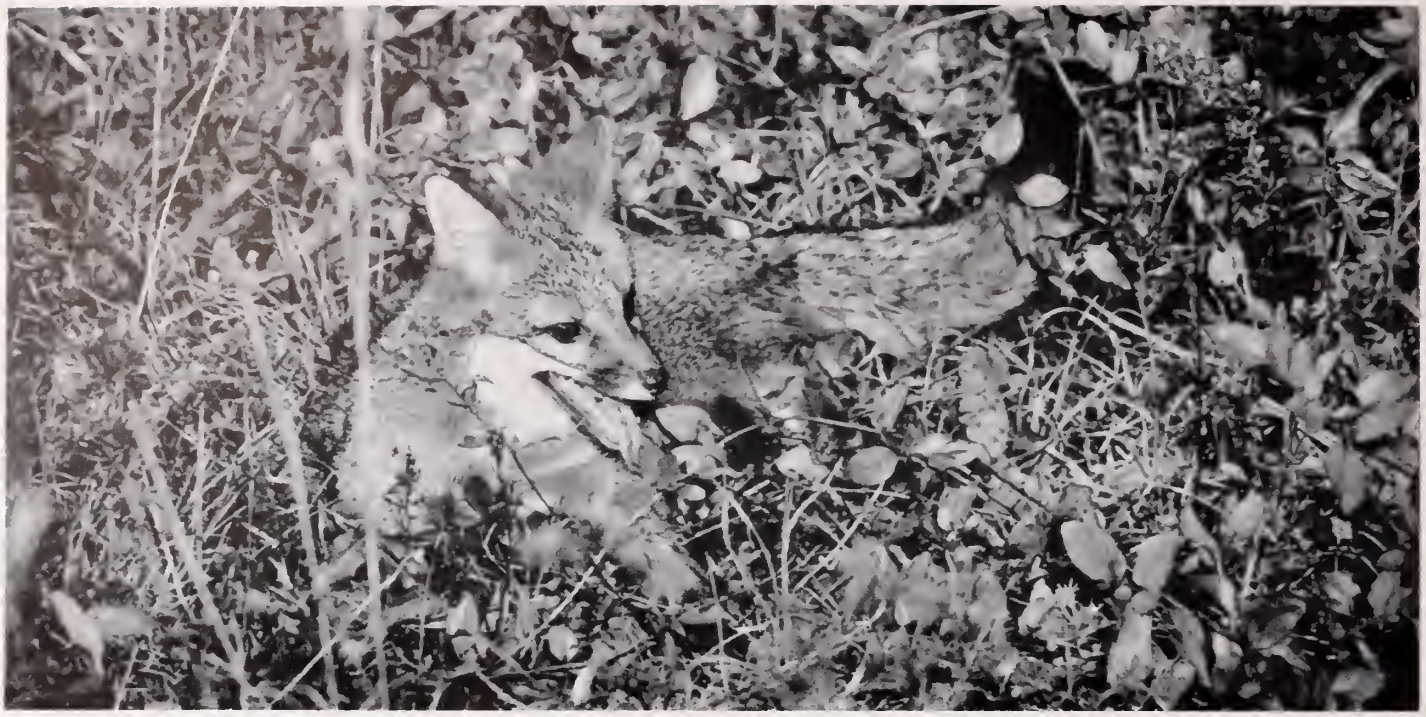
TOP RIGHT: The fall migration of these Canada geese enables them to enjoy a cool summer in the northern latitudes and yet they are able to avoid the severe winters.

RIGHT: Growing food plots offer a permanent source of natural foods along with necessary cover for both fall and winter. Recent research has shown this to be a better approach than emergency feeding.



No animal is more traditionally Virginian nor subject of more controversy—good and bad—than the fox.

KILLING PREDATORS WON'T

A famous conservationist gives his views on the relationship between small game and its enemies

By DURWARD L. ALLEN*

ABOUT 1940 most of the predators of North America got to feeling their biological oats. They took off on an increase spree that in less than a decade added up to amazing abundance. Wolves prospered in the Arctic, marten and fisher showed up in forests where they had long been rare or absent, otter and mink pelts poured into the market, coon hunting got better and better, the coyote spread north and east, and that sinister citizen, Br'er Fox, really took over. He spread his offspring, too thick, over much of the U. S. A.

It was what wildlife men call a general "eruption" of predators, and they do not claim complete understanding of what produces it.

Overlapping this was another sequence of events, possibly related, which is just as poorly understood and just as spectacular. In the early '40s, when the predators were first beginning their increase, such northern game as hares, rabbits, and grouse reached boomtime abundance in what your technical help talk about, uncautiously, as "the peak of the game cycle." It comes roughly at 10-year intervals, and this time it included two alien birds, the Hungarian partridge and pheasant. Natives and exotics alike were treating gunners to best-ever shooting in 1941-42.

It looked like the reward for good living, and sportsmen got set to enjoy it forever. Then the bottom dropped out. It was the sorriest game depression in recent years, and it hit a low in '46-'47. The predators were still on their population upswing.

When the game numbers dropped, while the predators prospered, there seemed to many hunters an obvious connection. The fox got the black ball. Certain state game commissions thought they had proved to sportsmen that bounties were a waste of money; but before long they were back at the old stand offering cash for the crown of Reynard.

But during the game decline, pheasants on Ontario's Pelee Island declined. There were no foxes there. This happened also on many mainland areas where there were few or no foxes. Biologists studied this and other evidence and could only conclude that predators had little to do with the scarcity.

For once professional men weren't cagey about predictions. "Sure," they said, "it's a mess, and we don't know all the ins and outs. But it has happened before, and if you'll stick around a while, things will improve."

They did, and by 1950 hunting generally was better. We haven't gone back to the rosy days of '42, but we'll

National Audubon Society photo by Jack Dermid

Of all game animals, the prolific cottontail rabbit takes the most punishment from predators.

GUARANTEE MORE GAME

be lucky to see that kind of game bonanza once in half a century.

The Squandering of Numbers

Few of us ever have the chance to see the squandering of numbers that goes on in wild-game populations. When we do, it looks completely out of hand. Wholesale carnage is the status quo. It's the normal thing for around 60 percent of pheasant and other game-bird nests to fail for one reason or another. Weather extremes and just plain abandonment may be more important than predators. Frequently over half of the chicks are "expended" between hatching and the hunting season. This happens in good ranges where hunters are happiest. In poor ranges it's worse.

Examine a thousand quail from hunters' bags, and you'll find that about 80 percent of them are birds of the year. Think it over. From one October to another, eight out of 10 quail are disappearing, to be replaced by next spring's hatch.

This yearly surplus is where we get our game crop and the predators get their kill. In taking it, neither we nor they are destroying anything that would survive without us.

Wildlife-population fluctuations have had more attention than most people realize. In one major job Paul L. Errington has done field research for more than 25 years in Wisconsin and Iowa. His early work on quail uncovered relationships that apply generally in wild communities.

Especially meaningful was his discovery that the number of birds a given area could winter was definitely limited and surprisingly consistent from one year to the next. It didn't seem to matter how many there were in the fall; by spring, the birds were whittled down to a "carrying capacity" level which was a characteristic of the particular area. And it happened whether enemies were plentiful or not. Quail that had what they needed in food and cover enjoyed relative security. Less lucky birds, skimping along in "slum" situations, took big losses from predators and other hardships.

I once asked Errington something I'd been thinking about. "Why don't mink clean the muskrats out of a marsh? It looks to me as though they could work through the houses and kill them at will."

Paul didn't go for that. "Not at all. A muskrat on his home grounds and in good health can avoid a mink. Sometimes we get big concentrations of rats when conditions are favorable for a couple of seasons, and populations may be cut down to size by a disease we've been studying. Usually the first indication of disease is that the mink are killing a lot more rats."

When Predators are Undertakers

The disease-predation hookup is real, but no biologist would expect predators to kill *only* diseased animals. The flesh-feeders have a heyday on the occasion of such creature calamities as food failure, bad weather, changing water levels, drought, overcrowding, and other emergency conditions. Such hardships, in effect, lower the supporting capacity of the range, and the predator is

Bobwhite Quail

Fish & Wildlife Service photo by Dufresne

Ringneck Pheasant

Soil Conservation Service photo

Ruffed Grouse

more of an undertaker than anything else.

As many a field man has seen, conditions on the land are the key to production. In a good piece of range, a fairly high density of animals can live in reasonable safety; but in another area, the same number would be top-heavy, and part of them would go the way of all surpluses. There may be little security of any kind in a really poor range where the game-prey animal is just hanging on. Often enough that's where someone will try to stock coop-reared pheasants, and we'll have another demand for fox control.

There are all sorts of local conditions, and you can find a sample to prove nearly anything—if you want to. Consider what might be done with a situation encountered by David A. Arnold in his fox project for the Michigan Game Division.

Significant Figures

Near Fennville, Arnold and his co-operators carried out a field study which showed that, over winter, local foxes were getting away with 44 pheasants per square mile! That figure isn't gladsome news under any circumstances; but out of context it could really set off the alarm. Some further figures are significant:

This farmland near Fennville is a state game refuge, and it has long been a winter concentration area for pheasants. Census figures showed that the food-rich fields were boarding 268 ringnecks to the square mile. The fox haul amounted to 16.8 percent of this nonhunted population.

That's quite a few, but not cataclysmic. It should be added that this ringneck winter resort is surrounded by sandy "oak grubs" and river bottoms that are fine fox country. In all of Michigan you probably wouldn't find a combination where Reynard has a better chance to massacre the pheasant.

A report on this exceptional situation could be sensational. But state averages give a different picture.

During the past two winters, field men in southern Michigan tracked foxes on snow for a total of 763 miles. In this distance foxes killed 293 known prey items, including 45 cottontails, 23 pheasants and 7 quail. The calculated winter kill of ringnecks by foxes in this part of the state was 1.66 birds out of a post-hunting average of 64 to the square mile. Michigan had an excellent pheasant season this year.

The sources of Reynard's protein are known from many a report of the past quarter century. A food study by Errington in the late '30s showed the usual thing: the mainstay of Iowa foxes was small, four-footed prey such as mice and rabbits. Birds and poultry were sideline items, with pressure on pheasants and quail increasing for a spell in early spring. Foxes picked up nearly anything dead on the highway; and this sort of complication is one reason why research men have long been cautious about using stomach and "scat" analyses not tied directly to field work.

Of all game animals, the rabbit takes the biggest beating from Reynard. Dave Arnold's Michigan work indicated that the average winter kill by foxes was 16.2 per square mile, which was calculated to be 6.6 percent of the rabbits left after the hunting season. It sounds high, but rabbit breeding and survival certainly allow for such losses. It's known that in good range you can shoot 60 percent of your fall rabbits, although we seldom come near it.

Disease Takes Over

Game men are acutely aware that the fox and coon, in particular, are too plentiful for their own health and welfare, not to mention the weal of mankind. It's the history of such conditions that disease will take over—and it has, but not to the extent we expected. Among the carnivores, virus afflictions like distemper, rabies,

Bobcat

Fish & Wildlife Service photo by Goldman

Common Skunk

Photo by American Museum of Natural History

Coyote

Fish & Wildlife Service photo by Haddon

Wild Turkey

OPL photo by Laurence M. Huey

Mourning Doves

Fish & Wildlife Service photo by Rex Gary Schmidt

Woodcock

and encephalitis are the usual thing. You can practically bet on mange. There were disease outbreaks among foxes as early as 1945, and you hear of new ones all the time; but Reynard hangs on, frequently mangy and ailing, at too high a level. If there were a workable and economic way to cut his numbers back, few people would object. Certainly not the biologist; and the fox hunter prefers to run vigorous, clean-coated animals.

But a practical difficulty in effective control is that predators have their own high breeding rate and turnover. Recent work in Wisconsin shows that you would have to wash out around 75 percent of a fall population of foxes to reduce a spring breeding stock from 10,000 one year to 8,875 the next. And if you did, what then?

You're up against another reality. It's almost universally true that when you thin out a breeding stock of animals in favorable range, the survivors rise to the occasion and bring through a higher percentage of young. With competition reduced, breeding success is higher and survival better. Any wildlife man knows that the most effective way to bring prosperity to the fox and his cronies is to do only a moderate job of thinning them out.

In terms of cutting down breeding stock, even that much reduction probably is beyond us at any reasonable price. Bounties don't do it. The million and a half dollars paid by Pennsylvania's Game Commission in weasel bounties since 1916 has accomplished no evident reduction of the weasel. When fox populations are reduced and trapping returns decline, the bounty hunter can't make a profit any more; so he just waits for next year's easy money again. Predator breeding stocks, like game populations, are padded with that annual surplus, and they can absorb a lot of punishment.

In part, this question is one of alternatives. We could easily dissipate all our funds by hacking away at the predators. We could also put our legal tender into more permanent habitat restoration work and raise more game.

Yes, we'd be raising more for the predators, but that needn't worry us if we get good hunting out of it. California has had an amazingly successful quail program centering around their watering device, the "gallinaceous guzzler." A few years ago, the man running that program was getting this kind of comment: "You fellows put in the guzzlers and you grow a lot of quail. Then the predators help take the crop. What we need is predator control along with the water."

Killing Predators or Growing Birds

The answer he gave applies to much more than quail and water. In effect it was this: "We could take your money and hire a lot of men and keep them busy killing predators. It might give you some better hunting. But we can invest that same money in more guzzlers, grow birds where there aren't any, and give you really better hunting and a real dividend on your investment." That's what they are doing.

Some hunters simply cannot abide the idea of a fox munching on *any* of their game. Others aren't so concerned. They like to trail the varmints and see them occasionally. Or they like to turn out the hounds and follow a chase across the hills. I had a kind of admiration for the gray fox that got the suet from my bird feeders and fished the dead chicken out of my compost heap. I could get fed up with too many of them, but I wouldn't want his kind exterminated; so I'm sort of glad the operation isn't practical.

This may seem quaint, but I buy my hunting license, pay my taxes and partake in the rights of citizenship. I and those who agree with me shouldn't be written off completely by the gogetters who hate Reynard's guts.

The latter have written the fox's obituary on asbestos paper, and periodically they cite some new and, for a change, unprejudiced job of detection on the predator question that will throw out all claims of the false

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Weasel

National Audubon Society photo by Maslowski

Raccoon

Badger

Fish & Wildlife Service photo by Haddon

FISH-EATERS WELCOME!

Overstocked ponds and new trends in "liberalized fishing" on lake and stream should mean greater protection for our fish-eating birds

By FLOYD B. CHAPMAN*

NOT long ago a farmpond owner asked the advice of the Ohio Division of Wildlife on how to control coots and grebes ("mudhens and helldivers," he called them) that he claimed were feeding on his fish. The first thing I told him was that coots or mudhens are vegetarians, but that grebes, commonly called helldivers, do actually consume a great many small fish.

But are such fish-eating birds a menace to fishing? It wasn't many years ago, in the heyday of fish and creel limits and closed seasons on fishes, that the fisherman felt quite bitter about kingfishers, herons, gulls, terns, grebes, loons, and other fish-eating birds that seemed to be competing with him on lake and river. But now the picture has changed. Liberalized fishing, at least for the warm water species, is here and with it the fish-eating birds should get a better break.

Going back to that letter from our farmer friend, were the pied-billed grebes fishing on his farmpond actually doing him harm? I answered in the negative, pointing out that many if not most farmponds are underfished. If such a pond is not fished hard, it is apt to get out of balance and consistent catches of puny bluegills and stunted bass are not conducive to the happiness of any pond owner.

National Audubon Society photo by Cruickshank

"Yes," I told the farmer, "you might get a federal permit** to kill off the fish-eating birds but, in so doing, you could be losing valuable allies in the constant struggle to maintain good fishing in your pond." If I were a pond owner I would go all out to encourage grebes, loons, and herons—even kingfishers—to hang around my pond.

I went on to tell the pond owner how fisheries biologists are finding that removing many of the small fishes (competitors for food and space) in a pond will permit more fish to grow up to eatable size. Then I drew a parallel between the man who successfully manages his pond for bigger fish and better fishing and the orchard owner who is confronted with the problem of too many apples on his trees. The orchardist knows he will have bigger apples, but not as many of them, if he thins the crop. It is expensive to thin by hand, so he may cautiously use chemical sprays which cause some of the apples to fall off. In planting most of his crops, the farmer is well aware of the necessity for proper spacing of the plants to obtain bumper yields. There is strong competition by plants for the available nutrients in the soil, just as there is by fish for the available food in a farmpond.

So, a pond owner can learn valuable lessons from farmers and orchardists. He soon discovers that he cannot trust to casual fishing by himself and his friends to thin out the fishes so that more of them can grow into big ones. It's true that he can get a seine and take out a batch of the little fellows, or he can poison or drain his pond and start all over again, but all this may prove to be a burdensome perennial operation, if the pond is not fished and fished hard.

Fortunately, there are many kinds of fish-eating birds (piscivorous, the books call them), native seiners if you like, who are at work all during the ice-free months helping the farmpond owner keep his fish population in balance. Gulls, terns, cormorants (shags), mergansers (fish ducks), bitterns, herons, egrets, and even some of the shorebirds, like yellowlegs, take prodigious quantities of fingerling size fish from our waters each year.

In our international relations, countries we have fought against in wartime suddenly have become valuable allies. Will it not be possible, as a result of the change to liberalized fishing, to alter public thinking in regard to the fish-eating birds? As a result, carefree days on lake or stream will be even more enjoyable. There'll be "malice towards none" and we can consider the kingfisher and the blue heron as fishing companions rather than competitors. The only thing that may continue to rile us a bit is that a kingfisher always takes home a mess of fish, and we don't, even with liberalized fishing!

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*Mr. Chapman is associate chief of the Game Section of the Ohio Division of Wildlife in Columbus.

**Permits are required before protected birds can legally be destroyed. Fish-eating birds protected by federal law include gulls, terns, bitterns, herons, egrets, loons, grebes, and mergansers. Pelicans, ospreys, kingfishers, and cormorants are not protected by federal law. In some areas they are protected by state law, but in other states they can be killed indiscriminately.

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

WILDLIFE ESSAY CONTEST DEADLINE THE 28TH. February 28th is the deadline for the Eighth Annual Wildlife Essay Contest, sponsored jointly by the Game Commission and the Virginia Division of the Izaak Walton League. Several hundred schools have entered the competition whose theme this year is "Our Natural Resources (soil, waters, plants, wildlife)—Their influence on man."

STATE FOREST HUNTING SUCCESS. One hunter in every 15 killed either a deer or a turkey during the two-day hunt on the State Forest, November 20 and 22. There was a total of 39 deer killed (20 in Buckingham and 19 in Cumberland). Nineteen hens and 13 gobblers were bagged by lucky hunters.

HOG ISLAND FEEDING GROUNDS DEPLETED BY HAZEL AND GEESE. The thousands of geese wintering at Hog Island State Waterfowl Refuge in the James River entirely consumed the remainder of the winter grain crops which survived Hurricane Hazel in October and then took off for other feeding grounds. Marsh specialist Charles Gilchrist says that adequate crops were planted in the fall to carry the geese through the winter and early spring, but the flooding of the fields with salt water during the hurricane devastated them. By next year it is hoped that dikes will have been built as protection against a recurrence.

PLANS FOR TROUT PLANTING ANNOUNCED. G. W. Buller, chief of the Fish Division, says the Commission has more trout to plant this year than ever before. Barring freeze-ups, Buller states that he will begin planting trout as early as possible in order to complete the project before the opening of the season at 12 o'clock noon on May 1, 1955.

SUCCESSFUL ANTLERLESS DEER SEASON. West of the Blue Ridge there was a total buck kill of about 5400, a six percent increase over last season, with adverse weather holding that figure below the estimated total. The special antlerless day in eight counties brought a harvest of an additional 2000, making the approximate combined total of 7400 deer killed west of the Blue Ridge.

SHOMON AGAIN TO HEAD WILDLIFE WEEK. J. J. Shomon, editor of Virginia Wildlife and chief of the Education Division of the Commission, has agreed to serve again in 1955 as chairman for Virginia Wildlife Week. The theme for this coming year will be preservation and wise use of America's wetland resources. Ed Dodd, creator of "Mark Trail" will be national chairman.

FARM PONDS IN STATE INCREASE. The number of farm ponds in the state is edging closer to the 7,000 mark with many additions during the past year. Bass thrive in the ponds which are a fine source of sport and food.

NORTH AMERICAN WILDLIFE CONFERENCE TO BE HELD IN MONTREAL. The 20th North American Wildlife Conference will be held March 14, 15 and 16, 1955 in the Sheraton-Mount Royal Hotel in Montreal. "Natural Resources Use—A Continental Challenge" will be the theme of the meeting, consisting of three general and six technical sessions devoted to the improved management and restoration of renewable natural resources.

MAJOR C. STEWART COMEAUX PASSES. Major C. Stewart Comeaux, former treasurer of the Wildlife Management Institute, a founder and former executive of the Sporting Arms and Ammunition Manufacturers' Institute, died of a heart attack at his home in Florida on December 10th. Major Comeaux was nationally known for his tireless efforts in the promotion of safety in the use of firearms and explosives and was keenly interested in wildlife conservation.

U. S. Forest Service photo

As long as American womanhood demands natural fur in its fashions, so long will the lure of the trapline hold onto the hearts of men.

A muskrat marsh in Tidewater Virginia. The muskrat remains Virginia's most important furbearer.

A number 1½ trap properly set in a den entrance and anchored in deep water will often catch a muskrat or an occasional mink.

The opening cut is important for a quick, neat job of skinning any furbearer.

A sharp knife and deft fingers prevent tearing holes in a pelt, thus insuring a top price from fur buyers.

A layer of fat indicates an abundant food supply on this section of the trap line.

Muskrat carcasses, known as "marsh rabbit," bring average of 40 cents in city markets.

Fleshing is an important and delicate step in preparing pelt for the fur trade. All of the fat and flesh must be removed from the skin.

This pelt is properly stretched on a commercial stretcher. Too much or not enough tension reduces the value of the pelt.

Trapping and Fur Marketing is Still Big Business

Uncredited photos are CGIF by Kesteloo

TRAPPING and fur marketing is one of the earliest known industries. Much of America today owes its founding to the ways of pioneer trappers whose early explorations took them into the four corners of the continent.

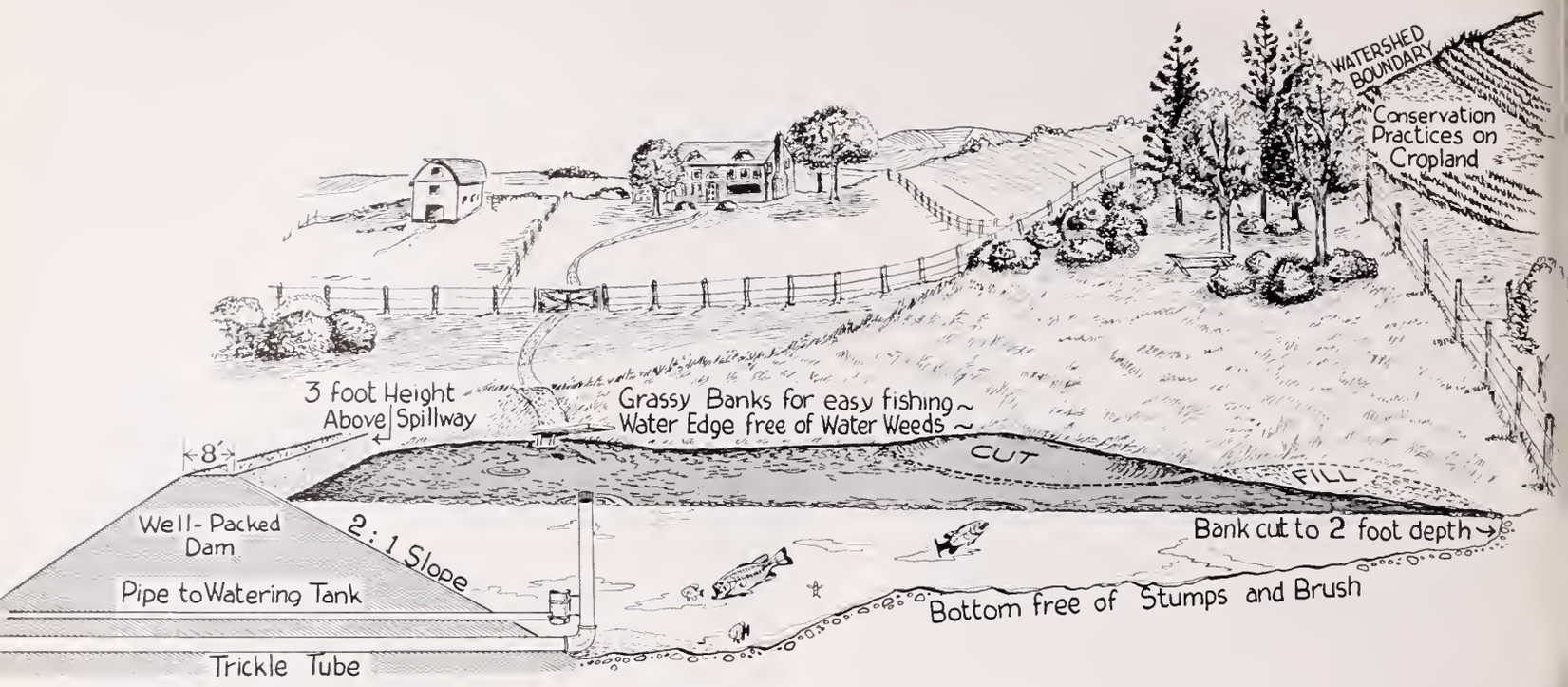
Down through the years, however, great changes have come to the trapping and fur trading industries. In America the fur trade tends to fluctuate from year to year depending upon the popularity of the different types of fur. Today many of the long-haired furs are on the way out, favored in turn by the short-haired furs of the mink-type.

Although a few people in Virginia make trapping and fur marketing a complete living, a great deal of this activity goes on. Many young trappers and their elders alike supplement their annual income by working a trapping line and marketing furs. Virginia's annual fur harvest amounts to more than a half-million dollars.

Air drying at a medium temperature, and protection from the elements, are a must for high grade furs.

Fish & Wildlife Service photo by Mead

A bale of properly prepared raw pelts is readied for shipment to the fur markets of the world.



A sketch of an ideally built farm pond in an excellent location

When You Build

YOUR FISH POND

Thinking of building a farm pond?

Here's expert advice on what to do and what not to do!

By
PHILIP F. ALLAN
Northeastern Biologist, Soil Conservation Service

A POND represents a fairly large investment in money—you may as well get the most out of it. Many folks want a fish pond. The wise choice of a location, care in construction, and good management of the finished pond, are the elements that give you the greatest returns in pleasure and satisfaction. If you follow the suggestions given here, you should be assured of having a pond in which you can take pride.

A good farm pond, well managed, can be the center of attractiveness and recreation on your place—a thing of economic as well as scenic value. Given a suitable location, the success of the pond is dependent upon how much interest you take in it. But a pond also can be an eye-sore and a liability. Nature does not always provide good sites on the land for pond building. Although you may be disappointed to find that a good pond cannot be constructed, it is better to have no pond than a mud-hole. I know of several people who bought or built country homes in anticipation of having a nice pond nearby—only to be disappointed because the site was unsuitable for a pond. With these pessimistic words out of the way, let's get on with what it takes to have a good pond.

It is advisable to use technical aids available to you in planning your pond. And you should tell whoever helps you just what your desires are. In Virginia, there are many trained men who have had experience in finding good pond sites and planning the construction of ponds.

The services of most of them are free. Farmers, in particular, may get technical aid through Soil Conservation Districts, which are served by Soil Conservation Service technicians.

The Virginia Commission of Game and Inland Fisheries, the U. S. Fish and Wildlife Service, and the Virginia Agricultural Extension Service (County Agents) also can direct you to sources of technical help. Even if you have to pay for the services of a professional agricultural engineer to help you find a site and plan the pond construction, you probably will be better satisfied with the job than if inexperienced folks did the work.

Some of the features that contribute to a satisfactory pond are its size, location, surroundings and depth, the nature of the water edges, and the elimination of unsightly brush and stumps from the pond bottom.

Unless you are indeed an avid fisherman and have many friends to help you harvest your fish, you will find that a relatively small pond is best. One acre of surface area, or thereabouts, is the most suitable size. The pond should not be smaller than a quarter-acre nor larger than two acres unless you plan to carry out very careful management. Very small ponds may be suitable for bait production and the larger ones for heavy fishing by many people. A one-acre pond can produce good fishing for three or four families.

Soil Conservation Service photo by Turnage

The careful construction of the dam is of paramount importance for the success of a farm pond.

An artificial pond can provide an ideal recreation area. A picnic grounds and plenty of fishing are important by-products.

Experience has shown that ponds located near the house get the best care. Handiness for fishing, bathing, and carrying on management jobs is a factor to be considered in choosing a location. Other uses of the pond, as for watering livestock or irrigating crops, may influence the choice of a pond site, but be sure to keep your own convenience in mind.

The surroundings—and what they will look like in the future—should be considered in picking a spot for your pond. Try to picture how it will look. Will it fit in nicely with the nearby landscape? Perhaps you will decide to remove some trees or plant trees and shrubs to improve the appearances of your pond. These things ought to be part of the plan.

The experienced pond designer looks carefully at the topography of the area where a pond is to be built—especially where run-off water is the source of supply for the pond. Many ponds fail because their watersheds pour too much water into them during rainy spells. The things that are considered are: the rainfall intensity in the locality, the area of watershed in relation to pond capactiy, the general slope of the land, how the land above the pond is being used, and the kinds of vegetation that clothe the watershed. An area of four or five acres of closely-cropped pasture, for example, may fully supply a small pond. But where well-kept woodland covers the watershed, the water yield from 30 acres may be required. These ratios have been worked out for various parts of Virginia and local Soil Conservation Service offices have the information.

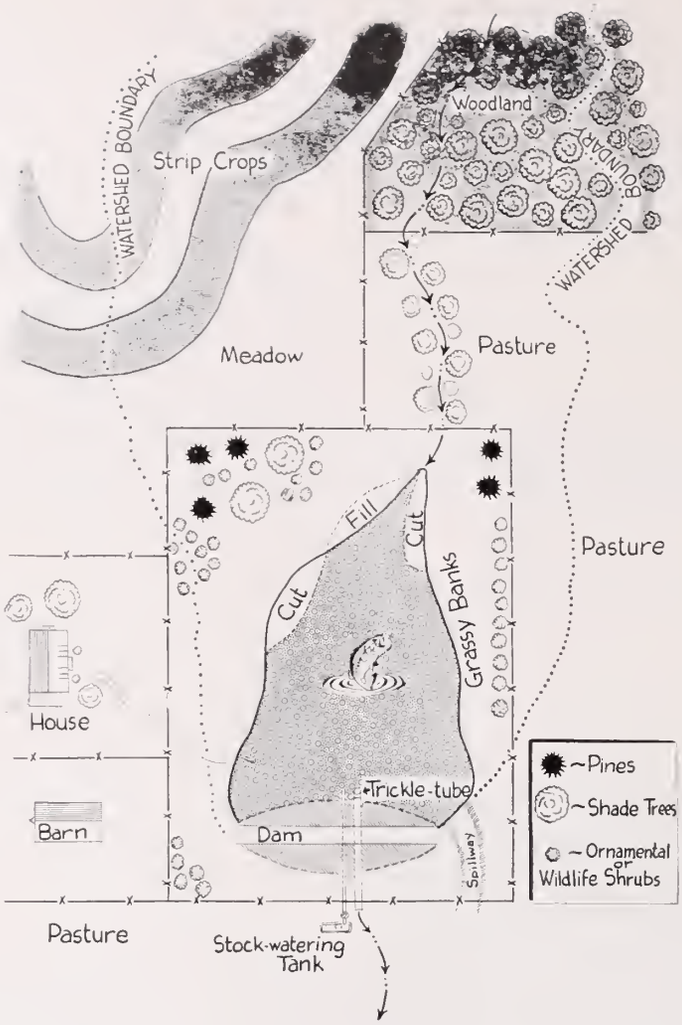
Careful consideration must be given, too, to the soil at the pond site. It is not enough to know that the soil at the ground surface will hold water. The soil should be tested several feet below the bottom of the dam site and elsewhere on the pond bottom. A layer of gravel, sand or cracked limestone below the water may drain the pond. Dams are sure to hold only when built of soil that packs well. Otherwise expensive leak-proof materials must be used in places likely to give trouble.

Good fish ponds must have adequate depth. An average depth of about four feet is best. This means that a considerable portion of the pond must be six feet or more deep. At high elevations, where ponds freeze deeply, ample depth is most important—and everywhere it is easier to keep ponds free of weeds if they are deep enough.

One of the special features of a good fish pond is steep edges. You should plan to make the edges slope quickly to at least a two-foot depth. This can be done by digging to that depth all areas which would have six to 24 inches of water when the pond is filled. Places where the depth would be less than six inches should be filled in with soil.

Folks once thought that stumps and brush were needed in a pond in order to have good fishing. Careful studies

Good conservation measures are needed for cropland when water flows from it to the pond. Do not lose your pond to silt. Consult your local County Agent or Soil Conservation Service representative for valuable advice.



A good farm pond, well managed, can be the center of attractiveness and recreation on your place —a thing of economic as well as scenic value. The success of the pond is dependent upon how much interest you take in it.

have disproved that idea. The dam site and pond must be cleared of trees and brush if you are to have a well-managed and sightly pond.

Of greatest importance to the safety of the pond is a spillway to dispose of water that is surplus to the capacity of the pond. A wide, gently-sloping, level-bottomed spillway is needed to take water safely from the pond to an ample watercourse. Failures of the spillway, which cause water to go over the dam, often result in complete loss of the pond. Be certain that a good spillway is installed. And *do not put a fish screen across it*—it is too likely to clog and cause a wash-out. Fish are easier and cheaper to replace than is a dam.

The dam should be built according to a well-planned design. Dams most likely to fail are those that have steep slopes, narrow tops, and insufficient height. Slopes on dams may be 2:1 (that is, 2 feet horizontally for each foot of height) on the best of soils, but may need to be 3:1 on soils that pack poorly. The top width should be at least eight feet, and allow for three feet or more of height above the spillway.

In construction, the soil that goes into the dam should be laid in layers and each layer packed well. Damp soil packs best. Sometimes it is necessary to put a core of water-tight material in a trench through the center length of the dam. This core extends a couple of feet up into the dam. A trickle-tube or other draw-down system is installed when the dam is built in order to carry normal water flow and prevent saturation of the spillway. It also permits downstream uses of water.

Finally, if the pond is in a pasture, the area is fenced and a tank is installed below the dam for the watering of livestock. Good conservation measures are needed for cropland when waters flow from it to the pond. Do not lose your pond to silt.

For detailed instructions on pond building get U.S. D.A. Farmers' Bulletin 1938 "Farm Fishponds," or ask the local County Agent or Soil Conservation Service representative to furnish you with appropriate publications.

The same technicians who can help you plan your pond can help you get fish for stocking it and advise you on the management that will give you good fishing. You must meet three basic requirements to have good fishing: (1) Stock the pond with the right kinds and numbers of fish at the right time. Do not guess at this—get some good technical advice. (2) Fertilize the pond if you want the biggest yields—using the right kinds and amounts of fertilizer at the right intervals. There's little use in fertilizing (except for weed control) if you do not use the fish you grow. (3) Harvest the fish crop heavily once it is ready for taking. Fish need little or no protection from the angler—be he pole fisherman, fly or plug caster, or spinning enthusiast.

WINTER AND WILDLIFE (Continued from page 7)

erally free-ranging throughout the year; however, they do seek dense cedar, pine, or rhododendron thickets where they find protection from the winter weather. They also like to go to the sunny side of a slope to secure the more direct rays of the sun.

Field mice and rats will burrow tunnels underneath the snow to their favorite feeding grounds. This not only gives them access to food but furnishes cover and protection from birds and mammals that prey upon them. To move from the field to your kitchen or basement is also a persistant habit and handy escape from winter for the house mouse. Squirrels are generally active throughout the year. If the winter weather becomes too rough for their liking, all they have to do is cuddle snuggly in their nest or den with an occasional trip to a cache of nuts which they prepared earlier in the fall.

Winter animal movements may be restricted, like the black bear, or extended, like the fox, depending primarily upon the requirements of the animal for food and cover and the availability of these requirements.

Winter Feeding

It seems to be an instinctive urge among humans to either keep an animal fat and healthy or kill it. This brings about the idea of a supplemental food supply for wildlife during the long winter months to help tide them over until the food supply is more plentiful. Recent research conducted by the Pennsylvania Game Commission has shown that the disadvantages of winter feeding outweigh its advantages, and that *emergency* feeding should be eliminated. This does not mean that food plots are not desirable, because this offers both food and cover. But when wildlife (especially deer) are bordering starvation, they have a tendency to gorge themselves and die as a result, if emergency feeding is resorted to. The point is; food plots may offer a permanent source of natural foods along with necessary cover for both fall and winter. Most winter losses are caused from other causes such as wind and cold rather than starvation, and most game animals can survive extended periods of snow and ice without serious decimation.

Winter feeding of birds in order to encourage them to stay close to one's home is both fascinating and beneficial, but it should be conducted as a continuous practice and not as an emergency measure.

Plant Life

Probably the most easily recognized adaptation for winter life is the change many plants undergo prior to and occasionally during the winter months. By the first of January the leaves of deciduous trees and shrubs have changed from the green of summer through the brilliant coloration of fall and now are lifeless and still underneath the branches beginning to slowly rot and decay to furnish mulch and food for the growth of the plant next spring. The leaves of the red oak may last deep into the winter, thus furnishing a measure of protection for the winter buds. The winter will then play host to multitudes of plants in a period of rest and dormancy. The movement of moisture from the plants to the air, a process called transpiration, is very small in comparison to the summertime. This is also true of the evergreens such as junipers and pines, which, with the exception of tamarack, retain their leaves or needles throughout the year.

Only a few of the changes which plants and animals undergo before or during the winter months have been mentioned here. However, in Virginia winter and summer present two different worlds in which to live, with spring and fall acting as bridges between the two. Both animal and plant life must indeed undergo various changes in order to survive the many climatic differences.

KILLING PREDATORS WON'T— (Continued from page 11)

prophets and return us to the sensible doctrine of an eye for an eye and a tooth for a tooth.

The Old Panaceas

They discover suddenly that the old panaceas are being neglected. Sidestepping technicalities, they call for more control, and imply that their methods haven't had a chance.

Probably this is honest ignorance, but the truth is they've tried their hunches with millions of our funds. The two most recent state reports on the fox situation indicate that, in the five years previous to 1952, both Michigan and Wisconsin spent an average of $100,000 a year of public money in fox-abatement efforts. Neither could see much profit in it.

Occasionally you'll encounter a type of irresponsible journalism which employs the stock in trade of attributing to wildlife scientists all manner of ridiculous attitudes and statements (usually involving some naive concept of the "balance of nature"), then destroying the confiding and simple-minded biologist with thunderous, horse-sense logic based on fourth-grade arithmetic.

This was much commoner 20 years ago, when newcomers to the business sometimes used a vigorous attack on anything and everything as a convenient cover-up. Today the average outdoor writer is an understanding and hard-working conservationist. His articles and columns bear witness to firsthand acquaintance with wildlife biologists and work being done.

Some of the sportsmen who lead their state and national organizations policy-wise also are getting a working knowledge of such subjects as predator-prey relations. Their competence sometimes places them well ahead of politically appointed officials who have not given much attention to technical matters. A quick look across the nation suggests that such sportsmen hold the real key to sound policy.

As for the technical men you've hired to do a job, they aren't so outspoken as they might be. Maybe it's because they realize how many unknowns are about them and how many things they'd like to know. But they've made progress that is real and here to stay. It's understandable if they'd like to see the customers get some good from it.

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Suggested Conservation Projects for Youth Groups

By WILLIAM C. KELLNER
Associate Editor

These youngsters are building bird houses which, when properly erected, will be quickly occupied.

YOUNG PEOPLE today will be the future guardians of our soil, water, timber and wildlife resources of Virginia and the nation.

If our high standard of civilization is to survive and if we are to maintain the leadership in the world, then young people must realize the importance of the wise use of our renewable natural resources.

The youth of Virginia have the time, energy, vigor, and enthusiasm to do a good turn to help wage the conservation battle. They have and are doing things right now which are already helping our wild animals and birds.

The Future Farmers of America, the 4-H clubs, the Boy and Girl Scouts of America, and other youth organizations have helped plant wildlife food and cover patches over the state. Thousands of bird boxes, wood duck nesting boxes, and squirrel denning boxes have been built and erected by youth groups to supplant natural nesting and den sites which the heavy hand of man has partially depleted in some areas.

The Virginia Commission of Game and Inland Fisheries has recognized the importance of lending assistance to youth groups of all ages and through its trained staff is giving sound and practical advice on worthwhile conservation projects.

The Commission's policy has been to work with and lend assistance to already established young people's organizations, such as boy scouts, girl scouts, 4-H clubs, Future Farmers of America, church groups, school groups, and summer camps. This assistance includes movies on conservation, color slide lectures, talks, field trips, nature hikes, exhibits, reprints, leaflets and information of firearm safety, game and fish laws, biological facts and game and fish management.

Many organizations that work with young people have planned projects of various kinds designed to appeal to the energies of youth. It is imposible to measure the progress of these programs on a yearly basis. If, however, over a long period of time a better citizen is developed from participating in some youth program, then the programs are certainly beneficial. Listed below are some of these projects that are interesting and worthwhile:

Statewide Annual Wildlife Essay Contest

The Virginia Division of the Izaak Walton League of America and the Virginia Commission of Game and Inland Fisheries is jointly sponsoring the popular and ever-growing Wildlife Essay Contest (approved by the Virginia State Board of Education) for the students from all of Virginia's schools. Grades 5 through 12 inclusive are eligible for participation. Each year thousands of essays are written and the young writers, by their efforts, gain untold knowledge of our natural resources. Ask your teacher and school principal about the rules governing the contest. Every school in Virginia is invited to participate. A total of $1,000 in 57 cash awards is made each year, and recently a $100 twelfth grade scholarship has been added.

Food and Cover Planting Contest

Every spring in all sections of the state interested game biologists, county wardens, F. F. A. chapters, 4-H clubs, soil conservation agents, Forest Service personnel and sportsmen's clubs are helping to promote planting contests for the improvement of food and cover for wildlife. Many sportsmen's clubs and Izaak Walton League chapters offer prizes to the local boy or girl who produces the best planting. These plantings are usually in the form of one-eighth acre or larger tracts of lespedeza bicolor plants or game food seeds for farm and forest game. If you have a suitable place for such a planting, contact your district game biologist, county game warden, or local soil conservation agent and he will gladly furnish you seed and sound advice without cost for a promise to plant and protect such planting from fire and grazing. This is a project that is of lasting benefit. The bicolor plantings improve from year to year as they grow larger and the seed crop increases.

Wildlife Homes and Feeders

Build and erect bird houses, wood duck nesting boxes, squirrel denning boxes and feeding stations.

Homes for wild animals and birds in certain areas are not too plentiful and any additional houses are

welcomed and quickly occupied when properly built and erected in a suitable location. This project is one that can be carried on during the winter months when outside activities are curtailed by cold and disagreeable weather. Detailed plans are available for the asking by writing the Virginia Commission of Game and Inland Fisheries, 7 North Second St., Richmond 13, Virginia.

Scouting Merit Badges

The Virginia Council of the Boy Scouts of America has 64,624 youngsters actively participating in scouting through its cub packs, scout troops, and explorer scout program. If you are in the scouting movement, earn one or more of the merit badges dealing with conservation. The merit badge pamphlets are well written by experts in their field, and the choice of projects are many. You will be surprised how interesting conservation can be.

Forest Fire Protection

Some high school groups answer the call of the local forest ranger to fight forest fires near their community.

During a dry season when the woods are vulnerable to fire, high school groups can be of valuable aid in helping fight forest fires. Many times the local fire fighting crews have more than they can handle, and any aid by local youth groups helps bring fires under control much sooner, thus saving many acres of valuable timber and the homes of much wildlife.

Scouting offers an excellent opportunity for youngsters to learn more about conservation.

Gun Safety

Join a gun safety class. If none is in your community, solicit the aid of an interested adult and start one.

In Virginia during last year's hunting season, fifty percent of the hunting accidents involved young gunners below the age of twenty. This was higher than the national average, where one-third of the accidents involved youngsters. If you would like to organize a senior or junior rifle club, you can get all of the information by writing to the National Rifle Association, 1600 Rhode Island Ave., N. W., Washington 6, D. C. Take advantage of the NRA's wealth of knowledge, experience and assistance. Let's be familiar with our guns and game so we can reduce gunning accidents.

Water Safety

Learn to swim. If the American Red Cross has a chapter near your home take a course in life saving. It might save your life on a fishing trip.

The easiest time for learning to swim is as a youth. Most summer camps stress swimming in their programs. Swimming is not only enjoyable, healthful recreation, but it can be an important safety device. Once the fundamentals of swimming are mastered, they are never forgotten and can come to your aid when you least expect to use them. Learn to swim; respect water — and boats — and don't be afraid of either.

Outdoor Hobbies

Develop an interest in some outdoor hobby such as a junior bird club, hiking club, outdoor photography, fishing, or some other interest that will get you out into the fields and woods.

The American Indian and the frontiersman lived and even survived by their knowledge of the outdoors. Learn to recognize some of the common wildflowers and trees. The small animals, insects and birds you see in your own back yard or school ground hold secrets that will startle you. A little learning will in turn give you many pleasures and will open your eyes to a new and interesting world right at your own back door.

Conservation Exhibit Models

Build an exhibit in your classroom showing a comparison of two areas: on one area demonstrate the results where sound conservation practices have been put into use. On the other area show what happens when the area is abused. These areas can be a farm, a woodlot, a stream, a pond or lake, or the home of some species of wildlife. Display the exhibit in a local sporting goods store during Wildlife Week or Conservation Week or at any opportune time. These can

(Continued on page 24)

The Ones That DIDN'T Get Away

By ROBERT G. MARTIN
Assistant Chief, Fish Division

NOW that the fervor and excitement of the past fishing season have faded with the onset of bleak winter clouds, most Virginia fishermen are undergoing an enforced vacation from their favorite sport. Of course, the expectant gleam in the eyes of that irrepressible optimist, the fisherman, occasionally appears on bright sunny days, but for the most part he is content to scheme anew for the "big one" that got away and compare notes with other members of his exclusive angling fraternity.

The Commission also, in line with its responsibilities of managing the fishing waters of the state, has been comparing notes on fishing success from various ponds and reservoirs. Thus far, creel census information from nine ponds and reservoirs has been collected during the three years, 1951-53, the project has been in operation. These waters vary in size from 60 to 25,000 acres and are located in such widely divergent areas as Back Bay in the extreme southeastern part of the state to the South Holston Reservoir in the southwest. In most instances there was considerable variation in their physical, chemical and biological characteristics. As might be expected from such a diversity of habitat, fishing success varied considerably. This data is presented in the accompanying table, "Yardstick of Fishing Success." Over 40,000 fishing trips are represented in this data. These trips lasted from an average of 6.1 hours at Back Bay to 2.6 hours at Douthat Reservoir.

By comparing your fishing success with the figures listed in the table you can see how you stack up with the average. Being average figures, however, it must be remembered the data includes the neophyte as well as the expert. In fishing, as in any other sport, the neophytes vastly outnumber the experts. If you want to compare your favorite fishing hole with those described in the table, be careful to select the pond which most resembles yours on the basis of age, location, and general biological characteristics.

Generally speaking, fishing was better at the South Holston Reservoir and Back Bay than at the other waters checked. Seventy-nine percent of the fishing trips at South Holston and 75 percent of the trips at Back Bay were rewarded by the capture of at least one fish. Carvin Cove, 35 percent, and Douthat, 43 percent successful, were the least inviting. For the nine waters as a whole, the mean percentage of successful fishermen was 60 percent. Thus, if you caught a fish on at least two out of every three trips you did better than average.

It will come as no surprise to many eastern Virginia anglers that Back Bay was head and shoulders above the other waters with regard to bass fishing success. Here, an average of 1.7 bass were caught for each fishing trip. At the other extreme, only .075 bass were caught during each fishing trip at the unfertile mountain reservoirs, Carvin Cove and Douthat. The mean catch per trip from all waters was .2 bass. Thus, it required an average of five fishing trips to produce one bass.

As will no doubt be suspected, most of the bass creeled were small. Approximately 80 percent of all the bass creeled were less than 15 inches in length. In none of the waters investigated, with the exception of Back Bay, did the proportion of bass over 13 inches exceed 30 percent. The extremes were registered with a respectable high of 46.6 percent at Back Bay and a low of 11.5 percent at Carvin Cove. Lunker size bass, 20 inches and over, were most abundant at Airfield and Holliday Lakes. The average proportion of bass of this size from all waters was approximately .5 percent. That means that only one out of each 200 bass creeled was truly a lunker. It

Well managed fishing waters will make catches like this more frequent.

Through fishery research important facts are brought to light that will improve fishing in Virginia.

might be added, however, that the proportion of lunkers sprinkled in most fishermen's conversation is much higher.

The catch of all species of fish per trip was highest at the South Holston Reservoir and Airfield pond, 4.1 and 3.9 fish per trip respectively. Again, the dubious honor of the least successful fishing rested with Carvin Cove, .84, and Douthat, 1.1 fish per trip. The mean catch per trip from the nine ponds investigated was 2.2 fish.

Approximately two thirds of all the anglers checked used live baits such as minnows, worms, salamanders, and frogs in preference to artificial lures. The only exception to this trend was noted at Back Bay. Here, over two thirds of all fishing was done with artificials. Although the difference was slight, it was noted that artificial baits proved more effective than live baits in capturing bass. Figures representing the lumped catch per unit effort for all other species gave live bait fishermen a decided nod.

Fishing pressure ranged from negligible at Back Bay, less than one trip per acre per year to moderately heavy at Fairystone Lake, 24 trips per acre per year. The mean fishing pressure was around 16 trips per acre per year. For comparative purposes, this would be about the same pressure a man and wife would exert on a one-acre farm pond if they fished together only eight times a year.

The total bass harvest per acre was exceedingly low, ranging from a high of nine bass per acre at Holliday Lake to less than one at Back Bay. The mean bass harvest was in the neighborhood of two bass per acre. In no instance was the bass harvest comparable to the capabilities of the various ponds to produce. For example, when Douthat Reservoir was drained, it was found that less than 15 percent, by weight, of the available bass had been taken by anglers. Tagging, netting and seining data from the larger impoundments likewise showed only moderate utilization of existing bass stocks.

In the face of this information the newly enacted regulation of the Commission of Game and Inland Fisheries permitting year 'round bass fishing seems appropriate. Plans have been completed to continue creel census activities at these waters in order to evaluate possible changes brought about by this continuous open season on bass.

While this should increase the total harvest because of stepped up fishing pressure, it will not necessarily increase the individual catch. For example, information collected during various phases of the impoundment survey invariably showed that individual fishing success (catch-per-unit-effort) was intimately associated with fishing pressure. It seemed that in each body of water only a relatively small proportion of the total bass population could be easily caught.

Following removal of this easily caught segment, the complementary increase in forage fish for the remaining bass appeared responsible for making further bass harvest extremely difficult. Thus, since the continued fishing pressure was not rewarded by a commensurate increase in the harvest, the overall catch-per-unit-effort suffered a decided dip. However, additional fishing pressure apparently had little long-term effect on the ability of this "backlog" of unharvested bass—which tended to be the larger ones—to undergo rapid expansion.

Fishing picked up again after the bass population had closed the gap between it and its forage supply and once again the "surplus" bass were available to the anglers. It is thought that this turn of events is largely responsible for the popular opinion that fishing in well balanced private ponds is far better than in comparable public waters. Actually, the total harvest from public ponds may well be higher, but the restricted fishing pressure in private ponds insures a higher catch-per-unit-effort.

Among the factors affecting the fishing success is the basic one of fertility. Other factors being equal, the inherent fertility of the reservoir and its watershed is the most important in determining the ultimate size of the fish population. This explains, in part, why fishing in the infertile mountain reservoirs of Douthat and Carvin Cove are so far inferior to that in the richer piedmont and tidewater ponds.

Assuming the limitations imposed upon fish production by this basic fertility, the relative abundance of the

various species and their size distribution determines to a great extent the actual harvest available from any given body of water. From the viewpoint of the angler the size distribution of the bass population is most desirable in new reservoirs, such as South Holston and Philpott. In new waters such as these, the more easily caught intermediate size fishes make up the dominant crop. As the pond matures the proportion of these easily caught intermediates declines as the number of larger, harder-to-catch bass increases. At the same time, the reduced growth noted in older impoundments results in an increase in the proportion of smaller sublegal bass.

At times, the overwhelming dominance of a particular

Yardstick of Fishing Success

	Back Bay	South Holston	Philpott	Carvin Cove	Douthat	Fairystone	Holliday	Airfield	Claytor	Mean
Location	Coastal plain	Western Mountain	Piedmont	Blue Ridge	Mountain	Upper Piedmont	Center Piedmont	Coastal plain		
No. Acres	25,000	8,000	2800	650	60	160	140	200	4200	
Yrs. Censused	1951-52	1952	1953	1952-53	1952	1952	1953	1951-2	1948-49-52	
Hrs./Trip	6.1	5.6	4.6	3.6	2.6	3.3	4.3	4.8	5.0	4.6
% Successful Trips	75	79	63	35	43	64	60	73	.....	60
Fish Catch/Trip	3.4	4.1	2.2	.84	1.1	3.3	2.1	3.9	2.1	2.2
Bass Catch/Trip	1.7	.68	.26	.075	.075	.13	.56	25	.2	.2
% Bass over 13"	46.6	13.8	28.1	11.5	15.9	21.7	12.0	24.4	..	21%
% Bass over 20"	.6	.00	.4	.5	.6	.00	1.1	1.6	...	.5
% Fishermen using artificial bait	68.3	29.9	31.8	5.9	34.6	31.6	44.0	29.3	34.2	31%
Trips/Acre	.16		7.6	14.6	18.5	24.4	15.4	9		15
Bass/Acre	.3		2.0	1.1	1.3	3.1	9.0	2.2		2.0

*Data includes at least 90% of the fishing pressure and bass harvest exerted during the open season for bass.

species may seriously affect fishing success. For example, bass and crappie fishing at Claytor Lake was excellent during two years of the study, 1948 and 1949, but by 1952 the emergence of a large walleye pike population made serious inroads on the bass and crappie. However, emphasizing the inherent fluctuating nature of fish populations, the walleye population has since declined somewhat and once again bass and crappie fishing is improving.

It is only through fact-finding programs such as the present creel census study that the basic principles of fish production can be resolved. However, these facts and principles must be translated into actual management practices before better fishing can become a reality.

SUGGESTED PROJECTS

(Continued from page 21)

be very elaborate and attractive.

Use of Conservation Pledge

This thirty-word creed defines the word "conservation" and explains the need for the wise use of America's basic natural resources. Reproduce the pledge, make a large wooden copy, and display it in schools, sportsmen's clubs, fraternal organizations and other adult groups. Use it in public displays.

The projects outlined above are useful ones. In working on them you will be doing something constructive *right now* for conservation and you will find that the wise use of natural renewable resources is as important to you as is the mastering of reading, writing and arithmetic.

New Year's Resolutions

It is a little late for New Year's resolutions, but this one came in from Bruce Slaven of the *Daily News-Record* up in Harrisonburg, Virginia, and we think it too good not to pass on to you who love the out of doors.

I think my first resolve would be
  To feed the quail and plant a tree.

I'll keep the streams wherein I fish
  So clean they'd meet my fondest wish.

I wouldn't catch all that's allowed
  But leave some for the other crowd.

In shooting a gun I'd use my head
  And be assured the deer was dead.

I'll be real sure some shaking limb
  Was a flashing buck—not neighbor Jim.

I'll keep my fence rows planted tall
  Where I expect to hunt next fall.

I'll take no liquor when I go
  For Mr. Buck or Mrs. Doe.

Resolved that when I take the wheel
  Of my old bus I'll always feel

I'll have my every sense at hand
  And not wind up in glory land.

And when I visit field and stream
  I'll throw no paper by the ream.

Those cans and bottles you may see
  Were left by others—not by me.

A litterbug I will not be;
  It's His outdoors I wish to see.

Bottles, cans and broken glass
  Make one forget about the bass,

And wish he'd meet the thoughtless guy
  Face to face and ask him why.

I guess he's just too ornery mean
  To even keep the outdoors clean.

Another thing we think we'd do
  Is be a bit more courteous too.

If a guy is at my place,
  I'd take this ugly, funny face

And detour to some other hole
  And let a rainbow bend my pole.

I wouldn't go, with talk and swishing,
  Right through the hole where someone's fishing.

Let these above suggestions be
  Some good resolves for you and me.

And this new year will have in store
  Much greater fun than fifty-four.

Lady Lands Lunker

Mrs. E. F. Norris, of Charlottesville, asks us "What is the largest bass caught in Virginia by one of the weaker sex?" Though we can't answer that one, apparently Mrs. Norris is right up there with the 7-pounder she caught in the same private fishing lake near Red Hill where John Fisk caught the 12-pound bass pictured in the December issue of *Virginia Wildlife*.

Let's allow Mrs. Norris to give us her own version of the big haul. "I ran with it," she writes, "for I couldn't keep a tight line. It jerked the line out of my hand each time I tried to reel it in, and I was tired of telling about the big one that got away. I started away from the lake running as fast as I could, reeling to catch up the slack as I ran. Apparently it took the bass by surprise for instead of fighting and swimming away, it started swimming towards the bank. Now I was coming back to the bank reeling in all the way, keeping the slack out. By the time the bass was at the bank I was too. My line was tight now and I gave it a quick jerk that landed it on the bank. It was hooked securely, I thought, but when I was about three yards away from the bank it threw the hook. I was on top of it with all fours by the time it hit the ground."

When measured, the bass was found to be 22¾ inches long. "This is what I had been fishing for all these years," says the proud lady angler.

The More the Merrier

A surprising number of dens have snakes, coons and skunks in them at the same time during the winter. Coons and skunks come out in the early spring. Snakes take their time and emerge, usually after the first thunder storm of the season.

Mid-Century Conference Report Published

"The Nation Looks at Its Resources" is the title of the 418-page report of the Mid-Century Conference on natural resources, held in Washington, D. C., December 2, 3 and 4, 1953. Henry Jarrett edited the report of the conference which was sponsored by Resources for the Future, Inc., a Ford Foundation subsidiary.

The volume can be ordered from the Mid-Century Conference Report Office at 1606 New Hampshire Avenue, N.W., Washington 9, D. C.

"Old Doc Morley has the laziest hound dog I've ever seen."

Whooping Cranes Lose Ground

Unless a few stragglers showed up late, the whooping cranes seem to have lost a little ground in their struggle for survival. Most recent report from the National Wildlife Federation says that an aerial survey showed only 21 of the 24 which went north last spring had returned to their wintering grounds at Aransas National Wildlife Refuge in Texas. No young-of-the-year were identified in the group.

Federal observers at the refuge were still hoping, however, that the other three adults and perhaps a juvenile would come in late.

Insuring the Future for Wildlife

The Wildlife Management Institute sends us a cheering report on an active program of the Tennessee State Game and Fish Commission to insure the future for wildlife in that state.

Since 1939 the Commission has been buying and undertaking development of about 97,000 acres of land with funds from the Pittman-Robertson Federal Aid in Wildlife Restoration Act. Leased lands from the TVA have been important in the agency's waterfowl program and other tracts have been sought from the TVA and Corps of Engineers wherever the Game and Fish Commission felt that public hunting and fishing could be benefited. Nearly 1,700 acres of private holdings have been leased in the bottomlands along the West Tennessee River and the leasing of additional thousands of acres of marsh lands is contemplated.

Today the Tennessee Commission is developing and managing a total of nearly 600,000 acres of land under its active wildlife program. The end is not yet, however, for the Commission is well aware that lands for public hunting and fishing will become scarcer in the future, so it is constantly on the lookout for suitable tracts for enlargement of the management area.

Bone Tar Oil Sprays Repel Deer

Pennsylvania State University experts on deer damage and control have reported that in carefully conducted experiments, sprays containing bone tar oil have repelled deer from apple trees, nursery plantings, forage and other crops. Applications have continued to be effective for about a month under average conditions.

American Eagle Confiscated

A bald eagle, crippled and taken by Roger Lovett, of Warrenton, was brought to taxidermist Lewis Francis Lee, at The Plains. Lee asked the game warden if it was permissible to mount the eagle. Since our national bird is protected by federal law, Supervising Warden W. E. Ware and U. S. Game Management Agent E. R. Atkinson confiscated the bird and Mr. Lovett signed a release giving the bird to a scientific institution.

Supervising Warden W. E. Ware and U. S. Game Management Agent E. R. Atkinson with a confiscated bald eagle.

Boy Scouts Try To Do Good Deed for Deer

Twenty-six Boy Scouts of Troop 743 have a doe's head, tail and forefeet to show for their attempt to help an injured doe deer. The boys, with Scoutmaster Ellsworth Kammeter, and Assistant Scoutmaster Larry Snedden, were hiking through the woods in Goochland County.

They heard rustling in the brush and saw a big buck trying to push along a crippled doe who had broken her back—as they learned later—by jumping a fence and falling down a 15-foot drop behind it.

The buck ran off as the boys approached and the injured doe put up a stiff fight in spite of her broken back. It took two and a half hours for the Scouts to subdue her and tie her on an improvised stretcher, made of saplings and coats.

They carried the wounded writhing animal about two miles, until they came to the home of Thomas J. Starke III where they called Goochland County Game Warden Seymour Breed.

Breed commended the boys' efforts to save the stricken doe, but explained that no veterinarian could mend her broken back and put her out of her misery. In appreciation of the Scouts' help, he said that if they would donate the venison to some charitable institution, he would authorize the Scouts to have the head, forefeet and tail.

The venison was turned over to Miss Vera Crickenberger, a supervisor at Sheltering Arms Hospital, and Troop 743 will have a trophy to show for one of their good deeds.

New Sportsman's Club at Cape Charles

Northampton County game wardens, Captain Ed Doughty, of Oyster, and R. T. Charnock, of Eastville, send us word of a new and energetic Sportsman's Rod and Gun Club organized in October at the Cape Charles Air Force Station on the Eastern Shore. A/1c Arthur J. C. Davis is president.

The group has 35 members and meets every other Monday night. Its conservation program includes films and talks. Since many of the members are out-of-staters, they are familiarized with Virginia's hunting and fishing regulations and their own personnel make a check on all incoming hunters to make certain there have been no violations.

Big Bobcat Trapped in Massanutten Mountains

Lem Richards, game biologist for the Commission, has sent in a photograph and report on a 27-pound male bobcat, trapped by Claude Higgs, of Shenandoah, in the Massanutten Mountains near Pitt Spring, Page County.

Mr. Higgs is a game manager employed by the Commission to work on the George Washington National Forest under the Cooperative Wildlife Program. An expert trapper, Higgs caught this bobcat feeding on an accidently killed doe deer he had used as bait. Though this was a big cat, he says he has caught others weighing up to 40 pounds.

Forty-Two Pounds of Bass in Ninety Minutes

"Mr. V. A. Lynn is one of the best men with a casting or fly rod I have ever seen," writes Gerald Simmons, game warden of Mecklenburg County, who recounts how this "great fisherman from way back" recently caught a string of eight bass which weighed a total of 42 pounds all within an hour and a half.

Lynn, who operates a radiator shop in South Boston when he isn't fishing, was using Johnson silver minnow and daredevil as bait. Largest of the bass weighed in at eight pounds. "It is worth one's time just to watch Mr. Lynn fish," says Warden Simmons, and it doesn't always require much time or patience either, for these eight were all caught between 3 and 1:30 one afternoon at Gordon's Lake.

V. A. Lynn with a string of lunker bass taken from Gordon's Lake.

Wildlife Questions and Answers

Ques: **Will there be legal beaver trapping in Virginia again this year?**

Ans.: There will not be a general trapping season, but it will be possible to secure a special permit to trap beaver during February if they are doing damage. An investigation by the local game warden and district game biologist will be made before any permit is issued.

Ques.: **Are there any nutria colonies in the state?**

Ans.: To the best of our knowledge, there are no nutria colonies in the state. We have had a report of one or two animals being taken in Back Bay in the extreme southeastern portion of our state, but probably these animals came from Currituck Sound, in North Carolina, where they were released some years ago.

Ques.: **Please help us to settle an argument by telling us whether or not mice can sing?**

Ans.: Apparently this is not just a housewife's hallucination as many people seem to think. Naturalist Alan Devoe writes: "No animalizer can go attentively exploring the night woods and fields for many years without finding out that mice do have singing ability. What they make is a high, wiry, warbling little trill, somewhat canary-like. Why don't we hear it oftener? Probably, though not certainly, because mouse music, like the bat cries . . . is mostly supersonic. Only occasionally does part of the song fall within our auditory range."

Ques.: **Are game fish color blind?**

Ans.: Many biologists say that game fish can distinguish colors about as well as we can.

Ques.: **Is it legal to trap weasels and skunks? If so, what is the season for trapping them and is it legal to use a rifle to take them from the traps after the hunting season?**

Ans.: The weasel and skunk may be trapped and killed with firearms at any time, but you must have a hunting license as well as a trapping permit, if both the trap and firearm are used in taking them. However, licenses are not required if you are going to hunt or trap on your own property.

Ques.: **Where do indigo buntings spend the winter?**

Ans.: Indigo buntings winter from Yucatan through Central America to Panama and in Cuba.

Ques.: **Please tell me how snapping turtles hibernate?**

Ans.: The common snapping turtle buries itself in mud or retreats to holes in stream banks for the winter. Large numbers have been taken from muskrat holes or from the mud under submerged logs. Sometimes they are temporarily wakened and may be seen in the water, even through the ice, during warm spells. They emerge usually in March, somewhat later in the northeast.

Ques.: **Is it necessary to live in a county in order to get a county hunting or fishing license?**

Ans.: You must be a qualified county voter or live in the county six months prior to the date of making application in order to get a hunting, fishing or trapping license.

"We don't want everyone to know this, but he's not ours. He's adopted."

Ques.: **Is a license required for crow shooting in Virginia?**

Ans.: A license is required to shoot any wild bird or animal in the state, except that a landowner may kill wild birds or animals on his own property without a license, though he must otherwise conform with seasons and bag limits on game birds and animals.

Ques.: **How old do wild ducks live to be?**

Ans.: What is believed to be the oldest wild duck on record is one shot on the Sartain Ranch in California, December 27, 1952. It had been banded at Lake Merritt, California, December 8, 1932, making it at least 20½ years old.

Ques.: **How can I get permission to operate a pheasant shooting preserve and what are the principle regulations governing such a preserve?**

Ans.: You should apply to the Game Commission for such a permit. You should own or have under lease the acres for which the permit is issued, post the boundary with a single strand of wire or fence clearly recognizable, agree to hunt and/or kill only pen-raised pheasants on the preserve, require valid hunting licenses of all persons hunting on the area, restrict all hunting of ring-necked pheasants to the period October 1-March 31 during which time there shall be no bag limit except as set by the licensee. You would be permitted to designate persons to hunt, shoot, have in possession and transport and dispose of by gift, under the above restrictions, ring-necked pheasants only. All other hunting shall conform with the general season and bag limit on the respective species.

Ques.: **Can foxes climb trees? Are cross foxes a mixture of reds and grays?**

Ans.: Red foxes don't usually climb trees, but gray foxes readily climb low trees. Cross foxes, like silver foxes, are just color phases of red foxes. The "cross" applies to the dark band across the shoulders.

Ques.: **Please give me some information about raising bloodworms and earthworms.**

Ans.: Bloodworms are not raised in captivity, but are found along the brackish and salt water coast, under stones and among seaweeds, particularly in burrows. They crawl out of their hiding places at night and it is then that local collectors find them. They refuse to eat in captivity and have not been successfully propagated. For detailed information on the raising of earthworms, you may write to the United States Fish and Wildlife Service, Washington 25, D. C., and ask for Leaflet FL-23.

Ques.: **I would like to make some extra money trapping during my spare time. Can you tell me how often it will be necessary to visit my traps?**

Ans.: It is unlawful to fail to visit all traps once each day and remove all animals caught therein and forthwith to report to the landowner as to stock, dogs or fowl caught therein and the date.

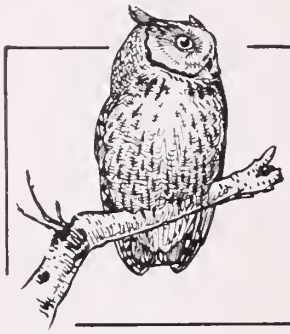
Ques.: **Can you tell me when the first foxhound field trials were held in this country?**

Ans.: The first foxhound field trials were held by the Brunswick Foxhound Club at Albany Hills, Maine, in 1889, according to *American Sporting Dogs*, edited by Eugene V. Connett.

OWLS

RESEARCH HAS PROVED THESE BIRDS TO BE HIGHLY BENEFICIAL · THE GREAT BULK OF THEIR FOOD IS RODENTS ~ MOST OF WHICH ARE HARMFUL TO MAN ·

BARN OWL ·
DESIGNATED "THE FLYING RAT TRAP" ~ IT COMMONLY NESTS IN BARNS, LOFTS, OR STEEPLES ·



SCREECH OWL
A SMALL OWL ~ MAY BE GRAY OR REDDISH BROWN · HIS CALL IS NOT A SCREECH ~ BUT A WAVERING WHISTLE ·

LONG-EARED OWL
LIKE THE LARGER GREAT HORNED OWL ~ IT WILL NEST IN AN OLD HAWK OR CROW NEST ·

GREAT HORNED OWL
THIS LARGEST OF OUR NATIVE OWLS CAN AND WILL TAKE GAME BIRDS AND ANIMALS ~ BUT HE STILL DEVOURS GREAT NUMBERS OF RATS AND MICE

BARRED OWL
THE WELL-KNOWN "HOOT OWL" ~ TYPICALLY FOUND IN HEAVY WOODS

SHORT-EARED OWL
"MARSH OWL"
IT NESTS ~ AND USUALLY SLEEPS ~ ON THE GROUND THE "EAR TUFTS" ARE SELDOM SEEN ·

Bob Hines ·

SNOWY OWL
A LARGE, WHITE OWL FROM CANADA ~ AN OCCASIONAL WINTER VISITOR ·